APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/573,955	04/26/2007	Haibin Huang	212/864US	1775

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CROCKETT & CROCKETT, P.C.
26020 ACERO
SUITE 200
MISSION VIEJO, CA 92691

EXAMINER
DO, CHAT C

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)
Office Action Summary	10/573,955	HUANG ET AL.
	Examiner	Art Unit	
	Chat C. Do	2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>18 March 2009</u>.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-13</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-13</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1.   This communication is responsive to Amendment filed 03/18/2009.

2.   Claims 1-13 are pending in this application. Claims 1 and 7-11 are independent claims.

This Office Action is made final.

Claim Objections

3.   Claim 1 is objected to because of the following informalities:

R e claim 1, the applicant is advised claim 1 is incomplete and it's also missing a

period (.) to complete the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.   Claims 1-11 are rejected under 35 U.S.C. 101 because the claimed invention is directed

to non-statutory subject matter.

Claims 1-13 cite a process, device, and medium for transforming data in

accordance with a mathematical algorithm. However, claims 1-13 merely disclose series

steps/components for transforming data without disclosing a practical/physical

application. In addition, method claims 1-6 and 12-13 fail to direct to a machine or

apparatus and device claims 7 and 9 fail to disclose any specific hardware component to

realize the implementation thus they are considered as software per se. Therefore,

claims 1-13 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

6.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7.   Claims 1-13 are rejected under 35 U.S.C. 102(e) as being anticipated by Ralf et al.

("Audio Coding based on Integer Transform").

        Re claim 1, Ralf et al. disclose in the article a process carried out by a device for

determining and outputting a transforming element for a given transformation function

for a transformation of a digital signal, which transformation function comprises a

transformation matrix and corresponds to a transformation of a digital signal from the

time domain into the frequency domain or vice versa (e.g. by DCT transformation

expression in page 2 right column wherein transformation would convert the time data

domain to frequency data domain), comprising the steps of: decomposing the

transformation matrix into a rotation matrix and an auxiliary matrix (e.g. section "The

MDCT" in pages 2-3) which, when multiplied with itself, equals a permutation matrix

multiplied with an integer diagonal matrix (e.g. property of the decomposition as by

mathematically multiplying the matrix by itself would produce a permutation matrix with

integer diagonally whenever pi/2); decomposing the rotation matrix and the auxiliary

matrix into a plurality of lifting matrices (e.g. section "The Lifting Scheme" in page 4);

determining the transforming element comprised of a plurality of lifting stages which

correspond to the lifting matrices (e.g. wherein each of the matrix can be decomposed

into three Lifting Stages in page 4); and.

Re claim 2, Ralf et al. further disclose in the article the transformation function is

a DCT-I transformation function, DCT-IV transformation function (e.g. section "MDCT

by DCT-IV and Givens Rotations" in pages 2-3), DST-I transformation function, DST-IV

transformation function, DFT-I transformation function, DFT-IV transformation function,

DWT-I transformation function or DWT-IV transformation function.

Re claim 3, Ralf et al. further disclose in the article the lifting matrices are each

block-triangular matrices with two invertible integer matrices in one diagonal (e.g.

section "The Lifting Scheme" in page 4).

Re claim 4, Ralf et al. further disclose in the article the invertible integer matrices

in each lifting matrix are identity matrices or negative identity matrices (e.g. section "The

Lifting Scheme" in page 4).

Re claim 5, Ralf et al. further disclose in the article the transforming element

comprises five lifting stages (e.g. page 4 wherein the two of the matrix is merged into

one).

Re claim 6, Ralf et al. further disclose in the article an audio signal or a video

signal is used as the digital signal (e.g. abstract in page 1).

Re claim 7, it is a device claim having similar limitations cited in claim 1. Thus, claim 7 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 8, Ralf et al. disclose in the article a method for transforming a digital signal from the time domain into the frequency domain or vice versa using a transforming element (e.g. by DCT transformation expression in page 2 right column wherein transformation would convert the time data domain to frequency data domain), wherein: the transforming element corresponds to a given transformation function (e.g. section "The Modified DCT" in page 2), which transformation function comprises a transformation matrix wherein the transforming element is determined by a process comprising decomposing the transformation matrix into a rotation matrix and an auxiliary matrix (e.g. section "The MDCT" in pages 2-3) which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix (e.g. property of the decomposition as by mathematically multiplying the matrix by itself would produce a permutation matrix with integer diagonally whenever pi/2) decomposing the rotation matrix and the auxiliary matrix each into a plurality of lifting matrices (e.g. section "The Lifting Scheme" in page 4); determining the transforming element to comprise of a plurality of lifting stages which correspond to the lifting matrices (e.g. wherein each of the matrix can be decomposed into three Lifting Stages in page 4); each lifting stage comprises the processing of sub-blocks of the digital signal by an auxiliary transformation and by a rounding unit (e.g. pages 3-4).

Re claim 9, it is a device claim having similar limitations cited in claim 8. Thus,

claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim

8.

Re claim 10, it is a computer readable medium claim having similar limitations

cited in claim 1. Thus, claim 10 is also rejected under the same rationale as cited in the

rejection of rejected claim 1.

Re claim 11, it is a computer readable medium claim having similar limitations

cited in claim 8. Thus, claim 11 is also rejected under the same rationale as cited in the

rejection of rejected claim 8.

Re claim 12, it has similar limitations cited in claim 3. Thus, claim 12 is also

rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 13, it has similar limitations cited in claim 4. Thus, claim 13 is also

rejected under the same rationale as cited in the rejection of rejected claim 4.

Response to Arguments

8.   Applicant's arguments filed 03/18/209 have been fully considered but they are not

persuasive.

a.   The applicant argues in page 11 first two paragraphs for claims rejected under 35

U.S.C. 101 that the amended claims 1 is carried out by a device and output

transformation is considered as statutory and further the amended claims produce

tangible results, thus the amended claims should considered as statutory subject matter.

The examiner respectfully submits that the method/process claims must tie to a specific machine or apparatus for realizing the implementation as required however claims does not specific any device, but merely by any device is not specific and lack of support for consider to be statutory. Further, mathematically outputting a transformation element is not considered as tangible result as alleged by the application wherein the transformation element is just a logical or mathematical result of the decomposing the transformation. It is unclear as how would that be tangible since it is just a result of decomposition of auxiliary matrix.

b.   The applicant argues in pages 12-14 for claims rejected under 35 U.S.C. 102(e) that Ralf only discloses the rotation matrix decomposed into a plurality of lifting matrices instead of an auxiliary matrix and the decomposition of the auxiliary matrix into a plurality of lifting matrices.

The examiner respectfully submits that the claims do not define specific structure of the rotation and auxiliary matrices. Thus, any matrixes can be either rotation or auxiliary matrix or both which is the case in Ralf. Ralf clearly discloses in page 2119 section 2 that the transformation matrix is decomposed into multiple rotation matrices wherein each one of the rotation matrix can be further decomposed into multiple lifting matrices (e.g. as comment above by the applicant). Thus, one of the rotation matrix of Ralf is considered as the auxiliary matrix. Given the rotation matrix as seen in page 2119 as the auxiliary matrix, when multiply with

itself, the result will produce another matrix that is permutation and integer as cited in the claimed invention $[\cos(2x) -\sin(2x): \sin(2x) \cos(2x)]$. Thus, the decomposed rotation/auxiliary matrix will have integer diagonal whenever x is multiple of pi/2.

Conclusion

9.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHAT C. DO whose telephone number is (571)272-3721. The examiner can normally be reached on Tue-Fri 9:00AM to 7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would

like assistance from a USPTO Customer Service Representative or access to the automated

information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

                                                        /Chat C. Do/
                                                        Primary Examiner, Art Unit 2193

June 8, 2009